

AMENDMENT TO THE CLAIMS:

This listing of claims will replace all prior versions of claims in the application:

LISTING OF CLAIMS:

1. (CURRENTLY AMENDED) A magnetic head, comprising:  
a sensor having an antiparallel (AP) pinned layer structure, wherein the AP pinned layer structure includes at least two pinned layers having magnetic moments that are self-pinned antiparallel to each other, the pinned layers being separated by an AP coupling layer; and  
a pair of compression layers positioned towards opposite track edges of the sensor, the compression layers providing compressive stress to the sensor, the compression layers enhancing the AP pinning of the pinned layers of the AP pinned layer structure.
2. (CURRENTLY AMENDED) A The head as recited in claim 1, wherein the compression layers are constructed of metal.
3. (CURRENTLY AMENDED) A The head as recited in claim 1, wherein the compression layers are constructed of rhodium.
4. (WITHDRAWN) A head as recited in claim 1, wherein the compression layers are constructed of tantalum.
5. (WITHDRAWN) A head as recited in claim 1, wherein the compression layers are constructed of tungsten.
6. (WITHDRAWN) A head as recited in claim 1, wherein the compression layers are constructed of a dielectric material.

7. (CURRENTLY AMENDED) A The head as recited in claim 1, wherein the compression layers are positioned substantially outside the track edges of the sensor.
8. (WITHDRAWN) A head as recited in claim 1, wherein the compression layers are substantially aligned with the sensor.
9. (CURRENTLY AMENDED) A The head as recited in claim 1, further comprising hard bias layers positioned below the compression layers, and an electrically insulative layer positioned between each hard bias layer and the sensor.
10. (CURRENTLY AMENDED) A The head as recited in claim 1, further comprising shield layers positioned above and below the sensor, and at least one electrically insulative layer positioned ~~adjacent~~ between each of the compression layers and the sensor and one of the shields for preventing conduction of electricity through the compression layers from one shield layer to the other shield layer.
11. (CURRENTLY AMENDED) A The head as recited in claim 1, further comprising shield layers positioned above and below the sensor, and at least one electrically insulative layer positioned ~~adjacent~~ between each of the compression layers and the sensor and one of the shields for preventing conduction of electricity through the compression layers from the sensor to one of the shield layers.
12. (CURRENTLY AMENDED) A The head as recited in claim 1, wherein the head is a GMR head, and further comprising at least one shield positioned towards the sensor.

13. (CURRENTLY AMENDED) A The head as recited in claim 1, wherein the head is a CPP GMR sensor, and further comprising an electrically conductive layer above the sensor.
14. (CANCEL)
15. (CURRENTLY AMENDED) A The head as recited in claim 1, wherein the head is a tunnel valve sensor, and further comprising a spacer layer formed of a barrier material.
16. (PREVIOUSLY PRESENTED) A magnetic head, comprising:  
a sensor having an antiparallel (AP) pinned layer structure, wherein the AP pinned layer structure includes at least two pinned layers having magnetic moments that are self-pinned antiparallel to each other, the pinned layers being separated by an AP coupling layer; ~~and~~  
a pair of compression layers positioned towards opposite track edges of the sensor, the compression layers providing compressive stress to the sensor; and  
an electrically insulating layer positioned between the sensor and each compression layer,  
wherein the compression layers are positioned substantially outside the track edges of the sensor.
17. (CURRENTLY AMENDED) A The head as recited in claim 16, wherein the compression layers are constructed of metal.
18. (CURRENTLY AMENDED) A The head as recited in claim 16, wherein the compression layers are constructed of rhodium.

19. (WITHDRAWN) A head as recited in claim 16, wherein the compression layers are constructed of tantalum.
20. (WITHDRAWN) A head as recited in claim 16, wherein the compression layers are constructed of tungsten.
21. (WITHDRAWN) A head as recited in claim 16, wherein the compression layers are constructed of a dielectric material.
22. (WITHDRAWN) A head as recited in claim 16, wherein the compression layers are substantially aligned with the sensor.
23. (CURRENTLY AMENDED) ~~A~~ The head as recited in claim 16, further comprising hard bias layers positioned below the compression layers, and an electrically insulative layer positioned between each hard bias layer and the sensor.
24. (CURRENTLY AMENDED) ~~A~~ The head as recited in claim 16, further comprising shield layers positioned above and below the sensor, and at least one electrically insulative layer positioned ~~adjacent~~ between each of the compression layers and the sensor and one of the shields for preventing conduction of electricity through the compression layers from one shield layer to the other shield layer.
25. (CURRENTLY AMENDED) ~~A~~ The head as recited in claim 16, further comprising shield layers positioned above and below the sensor, and at least one electrically insulative layer positioned ~~adjacent~~ between each of the compression layers and the sensor and one of the shields for preventing conduction of electricity through the compression layers from the sensor to one of the shield layers.

26. (CURRENTLY AMENDED) A The head as recited in claim 16, wherein the head is a GMR head, and further comprising at least one shield positioned towards the sensor.
27. (CURRENTLY AMENDED) A The head as recited in claim 16, wherein the head is a tunnel valve sensor, and further comprising a spacer layer formed of a barrier material.
28. (WITHDRAWN) A magnetic storage system, comprising:  
magnetic media;  
at least one head for reading from and writing to the magnetic media, each head having:  
a sensing element having the structure recited in claim 1;  
a write element coupled to the sensor;  
a slider for supporting the head; and  
a control unit coupled to the head for controlling operation of the head.